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Guest Editorial

The Scientific Life of Ansgar Belke: Financial Markets in a European Context

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It is both a pleasure and a heavy burden to write an introduction to this special issue of CCM. It is a heavy burden because it reminds me of the untimely passing of a close colleague, a good friend and the loving father and husband of a tightly knit family. As many of the contributors to this volume, I had been working with Ansgar when we received the sad notice of his sudden death. We all dedicate this special issue to the memory of his kind spirit and his wide-ranging academic interests and contribution. However, it is also a pleasure to serve as a guest editor for this impressive group of friends and colleagues who have graciously volunteered their time to contribute to this volume.

The guiding theme of this volume is to illustrate the wide-ranging nature of the contributions, which our common friend and colleague has made to economic research.

Ansgar was always interested in applying state of the art economic and econometric tools to the key policy issues at the European and global level. Recurrent themes in his work were the interactions between financial markets and monetary policy in an international context, mostly at the European, but also at the global level. Before the advent of EMU, the key issue in Europe was the volatility of exchange rates. During the formative early years of the academic career of Ansgar this question thus loomed large in his work (*Belke/Gros* 2001).

In a perfectly flexible environment, the volatility of exchange rates (or other macroeconomic variables) would not matter that much as firms would react symmetrically to ups and downs in the exchange rate or interest rates. However, this is no longer the case when one considers that any decision to start exporting is akin to an investment that involves adjustment cost.

Ansgar has pursued this theme for a long time. His first contribution dates from over 20 years ago (*Belke/Göcke* 1999). Originally, the interest in the importance of adjustment or set-up costs started with the question of what impact one could expect from fluctuations in the exchange rate on employment and output. Firms cannot start suddenly to export when the exchange rate become more fa-

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vourable. Entering a new market abroad is costly; it requires setting up new distribution channels and maybe new machinery because product norms and specifications abroad are different. This means that many firms might not react to small changes in the exchange rate because the set-up costs of going abroad are too high. This leads to 'bands of inaction', inside which exports react very little to the exchange rate.

Moreover, since the future is never certain firms will react not only to today's exchange rate, but also to where they believe the exchange rate will be tomorrow. A bout of uncertainty can induce firms to wait with their reaction if they believe that uncertainty will be lower tomorrow. This phenomenon is called the "option value of waiting" in the theory of investment under uncertainty.

Taking into account these set-up costs leads to another interesting implication, namely the potential for path-dependent multiple equilibria. If the exchange rate was favourable last period many firms will have entered export markets and will continue to do so even if part of the advantage disappears because the domestic currency appreciates. This can lead to a phenomenon called hysteresis – i. e. permanent effects of a temporary stimulus (*Göcke* 2002, *Belke* et al. 2014).

Set-up, or adjustment, costs are widely acknowledged to be important in reality, but they are difficult to deal with at the macroeconomic level because they are firm specific, making it thus impossible to pursue the simplifying assumption of one representative agent or firm. This is thus an issue which requires sophisticated techniques to aggregate the reactions from many different firms each of which might be in a different situation relative to its own 'band of inaction'.

The idea that adjustment costs can create bands of inactions can also be used to analyse the reaction of investment to any stochastic macroeconomic variable. Together with his long-time co-author Ansgar Belke, Matthias Göcke applies this framework in this volume to monetary policy. In the model he uses, investment is influenced by the interest rate, especially the long-term rate, which in turn can be influenced by monetary policy. Nevertheless, in the presence of set-up costs, the strength of the reaction of investment to any monetary policy action depends on the perceptions of firms how permanent the policy stance will be. Firms might invest less if they perceive a high probability that the interest rate will not stay low for long. This theoretical framework thus assigns particular importance to measures that provide information about the future policy stance, like for example, forward guidance. The credibility of monetary policy has been a recurrent theme of Ansgar's work for the Monetary Policy Expert panel for the European Parliament (*Belke* 2014).

Another contribution of *Belke/Göcke* (2021) is that they compute analytically the path of interest rate changes at the macro level from the existence of hyster-

esis effects at the micro level. They then show how the history of past rates influences the reaction of investment to monetary policy, especially when it is constrained by the lower bound.

With the advent of the euro, exchange rate volatility was no longer a key issue (at least within Europe), but another question arose, namely the determinants of balance of payments of the countries participating in EMU. Two contributions to this volume deal with the balance of payments; looking at two different components, namely the current account and how any current account imbalances are finance via capital flows.

The contributions by *Setzer* et al. (2021) and *Schnabl/Murai* (2021), both in this volume, fundamentally analyse the same phenomenon, namely official capital flows that mitigate the need for sudden current account adjustments, but from very different points of views, and using very different techniques.

Gunther Schnabl and Takai Murai look at the interplay between macroeconomic policy and current account imbalances in the Euro Area. Ansgar had addressed this issue already in 2013 and in 2018 (with Gunther Schnabl as one of the co-authors). In his earlier work, Ansgar had looked at the determinants of current account divergences across the euro area through the lens of longer-term trends like catching up and differential productivity growth (*Belke/Dreger* 2013).

In this volume, Gunther Schnabl and Takai Murai take a more holistic look at the drivers of current account (im)balances in the euro area covering the period after the euro crisis, taking into account fiscal policy, but also official and financial flows which provide the counterpart to current account imbalances. They provide evidence that wage developments and fiscal policy were important drivers of current account imbalances within the euro area. They also document in detail how after the euro crisis official capital flows provided the counterpart to continuing current account imbalances. These official flows consisted of official credits accorded to the 5 countries needing a joint EU/IMF program plus the balances accumulated within the TARTGET II payments system among national central banks within the eurosystem.

Ralph Setzer and co-authors from the ECB track in this volume also capital flows, but from a different angle. They investigate the phenomenon that was at the root of the euro crisis, namely sudden stops to capital inflows that can have a high cost because they create financial instability and can cause a recession, as demand must fall immediately to bring the current account into balance. They show the ECB has reduced the frequency of severe sudden stop episodes. They do this distinguishing between severe episodes of sudden reversals in capital flows from more frequent 'mild' ones. This distinction is important because these severe stops are the one that cause most damage.

Any current account deficit must, by definition, have a capital inflow as an accounting counterpart. A country that was running large current account deficits could thus be forced into a costly adjustment if private capital is suddenly no longer available. A key issue is then to identify net private capital flows. The definition adopted here is the sum of net flow for three items of the financial accounts, namely direct investment, portfolio investment and other investment (mainly banking flows). From these flows they subtract the official flows mentioned above, namely balance of payments financing, from the IMF or the ESM and the accumulation of imbalances in the TARGET system.

Setzer and co-authors in this volume use a probit model in which the probability of a sudden stop (which could be either severe or mild) is a function of a number of macroeconomic variables, such as trade openness, the state of the global economy (global output gap) and the state of global financial markets (global risk premium). They find that these latter two variables are significant predictors of severe sudden stops, as is the safe haven status of the domestic currency, which reduces of course the likelihood of a country experiencing a sudden stop. The key finding is that severe stop episodes became less frequent after the start of the large asset purchase programs of the ECB in 2015. Importantly, this reduction in the frequency of severe sudden stops can be observed only for euro area countries. This provides some validation of the model, showing that the reduction in the frequency of severe episodes was not just a consequence of easier global conditions.

Cross-border financial flows and their link to global financial conditions constitute another area in which Ansgar Belke has been active. This is an area which is dominated by the use of a particular econometric technique, namely vector autoregressive models (VAR). Ansgar had an affinity for applying ever more elaborated variants of VARs to key macroeconomic issues. Two key issues in the VAR approach are that many of the macroeconomic variables are not stationary and that it is sometimes difficult to assign a priori a chain of causality.

Belke et al. (2010b) therefore propose a VAR approach in which all variables can be endogenous. *Belke* et al. (2010) use Cointegrated Vector error correction model that distinguishes short-run and long-run dynamics based on a multivariate cointegration (VECM) approach. This cointegrated VAR approach (see *Juselius* 2006) also works without assuming a priori a specific causal structure for long-run relationships.

The VAR approach has been used heavily in the literature on the long-term impact of global liquidity – a topic which if anything has increased in importance over the last years. In the context of global liquidity, the idea is that liquidity shares a long-run (co-integrated) relationship with macroeconomic variables, for example in terms of a positive co-movement with real GDP. Deviations from these long-run path signal excess liquidity. *Belke* et al. (2014a) adopt a FA-

VAR approach introduced by *Stock* and *Watson* (2005a) to study co-movements among macro variables across the G7 and the euro area. They show that global shocks related to liquidity, GDP and house prices affect global commodity prices. *Belke* et al. (2010a) find that global liquidity drives the long-run relationships while commodity prices adjust to excess liquidity measures. *Belke* et al. (2013) also support the hypothesis that there is a positive long-run relation between global liquidity and the development of food and commodity prices.

In this research, global liquidity is usually an aggregate of national liquidity measures using GDP weights. An alternative approach is to adopt a factor model to extract global liquidity measures. But when studying global liquidity, one cannot avoid the reality that not all currencies are created equal. *Gopinath* et al. (2020) in particular propose the 'dominant currency paradigm', which is based on the observation that the USD is by far the most widely used 'vehicle currency', i. e. the currency which is used to denominate trade even between country pairs, which do not involve the US. Moreover, domestic enterprises in these countries whose income is partially in dollars need to hold USD balances in their local accounts and need short term dollar financing. This implies that USD liquidity is needed in many countries outside the US.

The dominant role of the USD in the global monetary system leads naturally to the question whether (cross border) US dollar debt plays a special role in global liquidity and whether actions by the Federal Reserve have an asymmetric impact.

Much of the previous work on global liquidity used data dominated by the period before the Great Financial crisis. In this volume, Joscha Beckmann uses data up to 2020 and shows that the dynamic changes after this crisis. Innovations in the balance sheet of the Federal Reserve lead to a strong increase in use of the US dollar in cross-border debt. This effect is clear, but not dominant before 2008. After that date, it becomes much stronger and dominates other factors. By comparison, innovations in the balance sheet of the ECB or the BoJ have a much smaller impact; both before and after 2008. This is surprising in view of the fact that the balance sheet of the ECB is of a similar magnitude as that of the Fed. (The balance sheet of the Eurosystem amounted to 7500 billion in May 2021, that of the Federal Reserve to about 8000 billion USD, which is approximately equivalent to the balance sheet of the eurosystem at current exchange rates (1.2 USD for 1 euro)).

A key ingredient in much of monetary policy modelling and applied work is the idea that market participants incorporate already today expectations about the future when deciding where to invest. The two key variables for which expectations are key are inflation and interest rates. Modern central banks want to anchor inflation expectations as close as possible to their policy target (close to 2 % for the ECB). A key issue for the ECB is thus how its monetary policy ac-

tions affects inflation expectations. Very recently, *Asshof/Belke/Osowski* (2021) have looked at this issue, finding some evidence that unconventional monetary policy operations can influence inflation expectations.

The role of anticipations of future actions for monetary policy has become particularly important over the last years as policy rates reached zero (our some effective lower bound given by the cost of keeping cash). When policy rates are stuck at this lower bound, central banks can hope to influence the economy mainly by influencing longer-term rates. They can do so by manipulating either expectations about future rates (forward guidance) or the risk premium (by reducing the supply of longer-term bonds through large-scale asset purchases). These measures have therefore become the preferred monetary policy instruments over the last years, especially in the euro area where the policy rates have by now been consistently negative for over 7 years (and are likely to remain negative for some time into the future).

Studying the impact of the large-scale purchases thus became naturally in important part of Ansgar Belke's work (*Belke/Gros* 2021, *Belke/Gros* 2018). A key element in the empirical work on the impact of asset purchases is the assumption that their effects should become visible in the market through lower long-term rates as soon as they are announced and not only when they are implemented. The reason for this is that the price of long-term bonds varies inversely with the (long-term) interest rate. If the long-term interest rate and thus the price of long-term bonds were to increase only the day the asset purchases are implemented investors could make a profit by selling long-term bonds short just days or weeks before the bond purchases start.

Pursuing the idea that expectations about the future matter for investment today to its extreme leads to the efficient market hypothesis (EMH), namely the idea that prices already incorporate all the information available. In this volume, Torsten Polleit takes a critical look at the EMH and its different corollaries, like the theory of rational expectations and its application in modern portfolio theory. He argues that it is difficult to reconcile the view that markets are efficient with the fact that so many investors still engage in stock picking. Moreover, it is well known since the work of Robert Shiller that actual market prices are much more variable than one would expect given the relatively slow-moving pattern followed by the underlying fundamentals, be they dividends for stock prices or short-term interest rates for long-term bonds.

These and other observations saw doubts about the notions that prices are always 'correct'. *Polleit* (2021) contrasts this with the 'Austrian business cycle theory' (ABCT). The ABCT emphasises the role of waves of optimism that interact with a fiat money regime where the central bank can engineer a credit expansion. Such a credit expansion, which does not have a counterpart in increased

savings lowers the market interest rate – below the level that would prevail in equilibrium had there been no additional credit supply.

A lower interest rate leads to lower savings and higher consumption and investment, an upswing ("boom") which the AFCT qualifies as artificial because it has been put into motion by monetary policy. But this combination of lower rates and stronger demand leads to self-reinforcing secondary effect through prices in financial markets. For instance, a lower discount factor raises the present value of firms' expected profits and thus their stock prices. In addition, lower interest rates lower firms' credit costs and improve their profit outlook, thereby contributing to firms' increased stock prices. As long as the central bank succeeds in keeping the boom going, profits remain high, and few enterprises fail. However, the boom cannot go on forever and when it ends, a negative spiral of lower demand and higher risk premia along with lower asset prices sets in.

Under the EMH such a financial cycle should not be possible because rational market participants would have expected the eventual bursting of the bubble. The Austrian view fits well the chain of events that led to the euro crisis, except that the trigger of the financial cycle was the advent of EMU. When joining the euro area, the Southern euro area experienced large declines in interest rates, both for their governments and enterprises. In the way predicted by the Austrian view this fostered credit financed domestic booms, often particularly in construction (Spain, Ireland), but also in consumption (Portugal). The boom was prolonged by what was called then the 'Great Moderation', i. e. a period of steady growth and low interest rates, including to a global reduction in risk premia. The large credit flows necessary to sustain these construction and consumption booms came to a sudden stop and reversed when it became apparent that many debtors would not be able to service their debt.

The case of Greece constitutes of course the most prominent example of this 'boom and bust' pattern. Ansgar contributed a number of publications that analysed the problems of the country from different angles. For example, *Belke/Kronen* (2016) apply the concept of hysteresis to the evolution of Greek exports, and *Belke/Hasekamp/Schnabl* (2018) investigate convergence as a driver of the Greek current account.

This sudden end to the boom was not anticipated by markets, raising for many the question whether markets are efficient and investors rational. Polleit in this volume argues that the Austrian view provides a more convincing explanation of the boom and bust pattern than the EMH.

The Austrian financial cycle evolves over years. At the higher frequencies (monthly, often daily) used by empirical evaluations of the short-term impact of monetary policy the question remains to what extend the anticipation of central bank bond buying by market participants influences the timing of the effect on

bond prices. In most cases, one cannot observe a large jump in bond prices (and long-term interest rates) on the day the bond purchases start. The (temporary) end of the PSPP in 2019 also did not result in any noticeable shifts in interest rates. Financial market participants had evidently anticipated these actions. Empirical evaluations of the PSPP, for example, thus employ the event study approach under which the announcement of bond buying is related to changes in interest rates on the announcement days (and not on the day the action is implemented). Ansgar contributed to this literature (*Belke* et al. 2017; *Aßhoff/Belke/Osowski* 2021; *Belke/Gros* 2021). The title of one contribution in particular illustrates the tension (*Belke/Gros* 2018) in the major findings: "Event Studies and the Random Walk Hypothesis: Why the End of Bond Buying by the ECB Is a Non-Event".

Because investors anticipate the bond buying, most of the price action in markets happens on the announcement dates. However, the effects of the policy do not seem to be as permanent as one would expect given the 'properly anticipated prices should follow a random walk.

No discussion about monetary policy would be complete without dealing with the role of crypto-currencies and related phenomena. This is an area where it is difficult to separate hype from the real importance of advances in information technology.

The qualification 'crypto' derives from that fact that a 'cryptocurrency' is essentially a book entry that is secured by cryptography to protect it against counterfeiting (and thus double-spending). The innovation of bitcoin and others that are based on the distributed ledger technology is that it promises to combine privacy with full transparency. The full transparency is achieved through the publicly available ledger of all transactions, which thus provides security against fraud. The most widely known of the cryptocurrencies is Bitcoin, which consists essentially of an algorithm that has to be solved to create a new unit (a new 'Bitcoin') and to validate transactions. This algorithm has been constructed in such a way as to ensure that only a limited amount of bitcoins can ever be created (or mined), by increasing the difficulty of creating new bitcoins as more of them have been created.

Cryptocurrencies do not create new wealth. They only provide a transfer of wealth to their owners. From a social welfare point of view, cryptocurrencies represent a negative sum game because somebody (the investor, the miner) expends valuable energy and computing resources to create something which does not yield any concrete advantage for transactions, but which somebody else is willing to buy because she thinks it will appreciate in value.

In this volume, *Beretta* (2021) thus argues that cryptocurrencies do not represent an innovation since private monies have existed already a long time ago. *Belke* and *Beretta* (2020b) thus speak of "modern monetary Middle Ages". In

their view, the issuance of money is once again decentralized. They argue that "the legal value [of medieval money] was almost always higher than the intrinsic value, due to the costs of coining ("brassage") and also to the fee that the minting authority took a fee on the coins it minted for its own benefit ('seigniorage')". In the case of cryptocurrencies, it is mainly the modern equivalent of "brassage" which determines their rate of creation. There is usually no central 'minting' authority that could impose a seigniorage.

Beretta (2021) also finds cryptocurrencies wanting on the three basic functions of money, namely as a "unit of account", a "medium of exchange" and a "store of value". No Cryptocurrency is at present used as a unit of account and cryptocurrencies are difficult to use a medium of exchange because the cost of each individual transaction remains very high.

For its owner, a bitcoin represents of course a store of value. But this value is very unstable if measured in the goods and services that make up GDP. Cryptocurrencies are also more difficult to store than cash (or a balance on a bank account) because the owner has to store the large electronic key somewhere safe. Reportedly about one fifth of all bitcoin keys have been lost, which is much more than what happens to cash – or bank accounts.

In other respects, bitcoin is more like gold. Mining either gold or bitcoin requires resources (mostly energy in both cases) and the scarcity value of both derives from the fact that mining gets ever more costly over time. In the case of gold this is due to geology, in the case of bitcoin (and other cryptocurrencies), this is due to an algorithm which the founder(s) has(have) determined. *Beretta* (2021) also illustrates the similarity of bitcoin and gold in terms of the exponential rise and the high volatility of their values.

The six contributions to this volume thus illustrate the breath of the interests of Ansgar Belke. It remains to me only to thank all the authors (and their co-authors) again for the effort they have made to investigate topical issues in international finance. I also wish to thank the editorial team of CCM for their enthusiastic support for this project.

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